

Amendment to the Claims:

This listing of the claims will replace all prior versions, and listings of claims in the present patent application:

Listing of Claims:

Claim 1 (currently amended). A method of removing a photoresist layer from an integrated circuit (IC) structure with little or no etching of an exposed barrier layer, comprising an integrated circuit (IC) structure having an etched dielectric layer with said [[an]] exposed barrier layer, wherein said dielectric layer comprises silicon and oxygen and said barrier layer is composed of a material selected from a group consisting of silicon nitride and silicon carbide, said method comprising:

firstly, feeding an oxidizing gas mixture into a reactor wherein said oxidizing gas mixture comprises carbon monoxide (CO), after etching said dielectric layer and exposing said barrier layer;

secondly, feeding an oxidizing gas mixture into a reactor wherein said oxidizing first gas mixture comprises carbon monoxide (CO);

generating a plasma in said reactor; energizing said oxidizing gas mixture having carbon monoxide (CO) to generate a plasma in said reactor; and

selectively removing said photoresist layer with said oxidizing gas mixture comprising carbon monoxide (CO) ~~with little or no etching of said exposed barrier layer,~~ thereby minimizing the loss of said exposed barrier material during said removing of said photoresist layer.

Claim 2 (previously amended). The method of claim 1 wherein said dielectric layer is silicon dioxide.

Claim 3 (previously amended). The method of claim 1 wherein said oxidizing gas mixture further comprises oxygen (O₂).

Claim 4 (previously amended). The method of claim 1 wherein said oxidizing gas mixture further comprises nitrogen (N₂).

Claim 5 (currently amended). The method of claim 1 wherein said oxidizing gas for photoresist removal mixture further comprises the gas mixtures selected from the group consisting of oxygen (O₂), nitrogen (N₂), nitrogen (N₂)/oxygen (O₂), nitrous oxide (N₂O), nitrogen (N₂)/hydrogen (H₂), and water vapor (H₂O).

Claim 6 (original). The method of claim 1 wherein said etched dielectric material is composed of a material selected from the group consisting of silicon dioxide, silicon oxide, organosilicate glass, and fluorinated silicate glass.

Claim 7 (original). The method of claim 1 wherein said IC structure further comprises a cap layer located between said dielectric and said photoresist, said cap layer is composed of a material selected from the group consisting of silicon dioxide, silicon oxynitride, silicon carbide and silicon nitride.

Claim 8 (original). The method of claim 1 wherein said reactor used to remove said photoresist from said IC structure is also used to etch said dielectric.

Claim 9 (currently amended). A method of removing a photoresist layer from an integrated circuit (IC) structure having little or no etching of an exposed barrier layer comprising an integrated circuit (IC) structure having an etched first dielectric layer, said exposed second barrier layer wherein said barrier layer is composed of a material selected from a group consisting of silicon nitride and silicon carbide, and a third layer that includes a conductive interconnect that abuts said barrier layer and a second dielectric material adjacent said conductive interconnect, said barrier layer between said etched first dielectric layer and said third layer, said method comprising:

firstly, feeding an oxidizing gas mixture into a reactor wherein said oxidizing gas mixture comprises carbon monoxide (CO), after etching said dielectric layer and exposing said barrier layer;

secondly, feeding an oxidizing gas mixture into a reactor wherein said oxidizing first gas mixture comprises carbon monoxide (CO);

generating a plasma in said reactor; and
energizing said oxidizing gas mixture having carbon monoxide (CO) to generate a plasma in said reactor; and

selectively removing said photoresist layer with said oxidizing gas mixture comprising carbon monoxide (CO) ~~with little or no etching of said exposed barrier layer~~, thereby minimizing the loss of said exposed barrier material during said removing of said photoresist layer.

Claim 10 (original). The method of claim 9 wherein said first dielectric layer and said second dielectric layer is comprised of materials that include silicon and oxygen.

Claim 11 (currently amended). The method of claim 9 wherein said oxidizing gas mixture for photoresist removal comprises the gas mixtures selected from the group consisting of oxygen (O₂), nitrogen (N₂), nitrogen (N₂)/oxygen (O₂), nitrous oxide (N₂O), nitrogen (N₂)/hydrogen (H₂), and water vapor (H₂O).

Claim 12 (original). The method of claim 9 wherein said etched first dielectric layer is composed of a material selected from the group consisting of silicon dioxide, silicon oxide, organosilicate glass, and fluorinated silicate glass.

Claim 13 (original). The method of claim 9 wherein said IC structure further comprises a cap layer located between said photoresist layer and said first dielectric layer, said cap layer is composed of a material selected from the group consisting of silicon dioxide, silicon oxynitride, silicon carbide and silicon nitride.

Claim 14 (original). The method of claim 9 wherein said reactor used to remove said photoresist from said IC structure is also used to etch said first dielectric layer.

Claim 15 (currently amended). A method of removing a photoresist layer from an integrated circuit (IC) structure having little or no etching of said exposed barrier layer comprising an integrated circuit (IC) structure having an etched dielectric layer with an exposed barrier layer, wherein said barrier layer is composed of a material selected from a group consisting of silicon nitride and silicon carbide, said method comprising:

firstly, ~~etching said dielectric layer and exposing said barrier layer;~~

secondly, feeding an oxidizing gas mixture into a reactor wherein said oxidizing gas mixture comprises carbon monoxide (CO), wherein said oxidizing gas mixture comprises the gas mixtures selected from the group consisting of oxygen (O₂), nitrogen (N₂), nitrogen (N₂)/oxygen (O₂), nitrous oxide (N₂O), ammonia (NH₃), nitrogen (N₂)/hydrogen (H₂), and water vapor (H₂O), after etching said dielectric layer and exposing said barrier layer;

secondly, energizing said oxidizing gas mixture having carbon monoxide (CO) to generate a plasma in said reactor; and

~~generating a plasma in said reactor; and~~
selectively removing said photoresist layer with said oxidizing gas mixture comprising carbon monoxide (CO) ~~with little or no etching of said exposed barrier layer,~~ thereby minimizing the loss of said exposed barrier material during said removing of said photoresist layer.

Claim 16 (currently amended). The method of claim [[13]] 15 wherein said dielectric layer is comprised of materials that include silicon and oxygen.

Claim 17 (currently amended). The method of claim [[13]] 15 wherein said etched dielectric layer is composed of a material selected from the group consisting of silicon dioxide, silicon oxide, organosilicate glass, and fluorinated silicate glass.

Claim 18 (currently amended). The method of claim [[13]] 15 wherein said IC structure further comprises a cap layer located between said dielectric layer and said photoresist, said cap layer is composed of a material selected from the group consisting of silicon dioxide, silicon oxynitride, silicon carbide and silicon nitride.

Claim 19 (currently amended). The method of claim [[13]] 15 wherein said reactor used to remove said photoresist from said IC structure is also used to etch said dielectric layer.

Claim 20 (currently amended). A method of removing a photoresist layer from an integrated circuit (IC) structure with little or no etching of said exposed barrier layer comprising an integrated circuit (IC) structure having an etched dielectric layer with an exposed barrier layer, wherein said dielectric layer comprises silicon dioxide and said barrier layer is composed of a material selected from a group consisting of silicon nitride and silicon carbide, said method comprising:

firstly, etching said dielectric layer and exposing said barrier layer;
secondly, feeding an oxidizing gas mixture into a reactor wherein said oxidizing gas mixture comprises carbon monoxide (CO) and oxygen (O₂), after etching said dielectric layer and exposing said barrier layer;

secondly, energizing said oxidizing gas mixture having carbon monoxide (CO) to generate a plasma in said reactor; and

~~generating a plasma in said reactor;~~

selectively removing said photoresist layer with said oxidizing gas mixture comprising carbon monoxide (CO) ~~with little or no etching of said exposed barrier layer,~~ thereby minimizing the loss of said exposed barrier material during said removing of said photoresist layer.

Claim 21 (currently amended). A method of removing a photoresist layer from an integrated circuit (IC) structure with little or no etching of said exposed barrier layer comprising an integrated circuit (IC) structure having an etched first dielectric layer, an exposed second barrier layer wherein said barrier layer is composed of a material selected from a group consisting of silicon nitride and silicon carbide, and a third layer that includes a conductive interconnect that abuts said barrier layer and a second dielectric material adjacent said conductive interconnect, said barrier layer between said etched first dielectric layer and said third layer, comprising:

~~firstly, etching said dielectric layer and exposing said barrier layer;~~

~~secondly, feeding an oxidizing gas mixture into a reactor wherein said oxidizing first gas mixture comprises carbon monoxide (CO), after etching said dielectric layer and exposing said barrier layer;~~

secondly, energizing said oxidizing gas mixture having carbon monoxide (CO) to generate a plasma in said reactor;

~~generating a plasma in said reactor;~~

selectively removing said photoresist layer with said oxidizing gas mixture comprising carbon monoxide (CO) ~~with little or no etching of said exposed barrier layer,~~

thereby minimizing the loss of said exposed barrier material during said removing of said photoresist layer,

 said first dielectric layer and said second dielectric layer is comprised of materials that include silicon and oxygen, and

said oxidizing gas mixture for photoresist removal comprises the gas mixtures selected from the group consisting of oxygen (O₂), nitrogen (N₂), nitrogen (N₂)/oxygen (O₂), nitrous oxide (N₂O), nitrogen (N₂)/hydrogen (H₂), and water vapor (H₂O).